Space Weather Forecast

Issued on Wednesday, 28 August 2024 at 00:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: M-class flares and R1/R2 blackouts likely. Slight chance of coronal hole fast wind arriving 28-29 Aug.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was Moderate over the past 24hrs, with a single moderate class flare, peaking at M1.1 at 27/0943 UTC from a large region in the southwest.

There are ten sunspot regions on the visible disc. The most notable flare source remains the region located in the southwest quadrant. There is another large region near south centre disc but it is mostly inactive and unchanged. Magnetic looping seen in the east indicates the proximity of a returning region. The remaining regions are either small or magnetically simple and mostly stable.

No Earth-directed CMEs were observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind parameters indicate that a CME arrived at L1 (Lagrange point) at around 27/0735 UTC, which left the Sun on 23 Aug. The solar wind speed increased from 250 to 330 km/s. The Interplanetary Magnetic Field (IMF) became moderate, the important north-south component starting to show a more erratic behaviour. Resulting geomagnetic activity was mostly Quiet (Kp 0-2) with an Unsettled (Kp 3) interval observed 27/0600-0900 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate class flares are expected with a slight chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: The CME that left the Sun on 23 August arrived at L1 early on the 27 Aug, but impacts on the geomagnetic activity were limited, with only a few Unsettled intervals. However, a coronal hole fast wind may slightly enhance the solar wind speed late on Day 1 or early on Day 2 (28-29 Aug) but again, geomagnetic activity is expected to be mostly Quiet, with the slight chance of Unsettled intervals. Largely Quiet activity on Days 3 and 4 (30-31 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background, but there is a chance of this rising in response to any notable flares, especially from the regions in the western disc. This gives a slight chance of exceeding the S1 Minor Solar Radiation Storm level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	65	65	65	65
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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